



ENVIRONMENTAL RESOLUTIONS, INC.

March 31, 2006
ERI 261913.L49

Mr. John Mahoney
Redwood Oil Company
50 Professional Center Drive, Suite 100
Rohnert Park, California 94928

SUBJECT Laboratory Analysis Results of Groundwater Samples Collected from the Private Water Well Treatment System Located at 2050 Marlow Road, Santa Rosa, California.

Mr. Mahoney:

At the request of Redwood Oil Company (Redwood), Environmental Resolutions, Inc. (ERI) is providing the analytical laboratory results of the groundwater samples collected from the private water well and water well treatment system located at 2050 Marlow Road, in Santa Rosa, California. The well head treatment system consists of two 110-pound granulated activated carbon vessels connected in series; an ultraviolet light source; system totalizer; and influent, intermediate, and effluent sampling ports.

On March 8, 2006, ERI collected influent, intermediate, and effluent water samples from the groundwater treatment system. ERI submitted the influent water samples to a California state-certified laboratory, under Chain-of-Custody protocol, for analysis for total petroleum hydrocarbons as diesel; total petroleum hydrocarbons as gasoline; benzene, toluene, ethylbenzene, and total xylenes; methyl tertiary butyl ether (MTBE), tertiary butyl alcohol, di-isopropyl ether, ethyl tertiary butyl ether, 1,2-dichloroethane, 1,2-dibromoethane, and tertiary amyl methyl ether using the laboratory methods listed on the Laboratory Analysis Report (attached).

Based on the laboratory analytical results of the influent water sample which indicated that MTBE was detected above the laboratory reporting limit, intermediate and effluent water samples were analyzed for MTBE using the laboratory method listed on the Laboratory Analysis Report (attached). Results of laboratory analysis of the water samples are summarized on the attached table.

Please contact Mr. Glenn L. Matteucci, ERI's project manager for this site, at (707) 766-2000 with any questions.

Sincerely,
Environmental Resolutions, Inc.

Karen L. Navarro
Technical Writer
Glenn L. Matteucci
Project Manager

Attachment: Cumulative Monitoring and Sampling Data for Private Water Well and Well Head Treatment System
Laboratory Analysis Report and Chain-of-Custody Record

cc: Mr. and Mrs. Callison
Ms. Joan Fleck, California Regional Water Quality Control Board, North Coast Region

601 North McDowell Boulevard, Petaluma, California 94954 707-766-2000 FAX 707-789-0414
Lake Forest • Petaluma • Seattle • Phoenix

TABLE 1
CUMULATIVE MONITORING AND SAMPLING DATA FOR PRIVATE WATER WELL
AND WELL HEAD TREATMENT SYSTEM
 Redwood Oil Facility 114
 1855 Guerneville Road
 Santa Rosa, California
 (Page 1 of 2)

Well ID	Sample Date	Sample ID	TPHd ($\mu\text{g/L}$)	TPHg ($\mu\text{g/L}$)	MTBE ($\mu\text{g/L}$)	B ($\mu\text{g/L}$)	T ($\mu\text{g/L}$)	E ($\mu\text{g/L}$)	X ($\mu\text{g/L}$)	ETBE ($\mu\text{g/L}$)	TBA ($\mu\text{g/L}$)	DIPE ($\mu\text{g/L}$)	TAME ($\mu\text{g/L}$)	1,2-DCA ($\mu\text{g/L}$)	EDB ($\mu\text{g/L}$)	Ethanol ($\mu\text{g/L}$)	Methanol (mg/L)
DW2050	04/21/99	—	<50	<50	5	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—	
DW2050	08/11/99	—	<50	<50	0.5	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—	
DW2050	10/28/99	—	<50	<50	0.5	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—	
DW2050	02/04/00	—	<50	<50	0.5	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—	
DW2050	05/01/00	—	<50	<50	2	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—	
DW2050	07/25/00	—	<50	<50	2	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—	
DW2050	10/26/00	—	<50	<50	0.5	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—	
DW2050	01/17/01	—	<50	<50	5	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—	
DW2050	04/24/01	—	<50	<50	5	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—	
DW2050	07/31/01	—	<50	<50	5	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—	
DW2050	12/05/01	—	<50	<50	5	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—	
DW2050	01/31/02	—	<50	<50	5	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—	
DW2050	04/17/02	—	<50	<50	2	<1	<1	<1	<1	—	—	—	—	—	—	—	
DW2050	05/24/02	—	<50	<50	5	0.5	0.5	0.5	<1	—	—	—	—	—	—	—	
DW2050	07/10/02	—	<50	<50	4	<1	<1	<1	<1	—	—	—	—	—	—	—	
DW2050	08/07/02	—	<50	<50	5	0.5	0.5	0.5	<1	—	—	—	—	—	—	—	
DW2050	10/10/02	—	<50	<50	5.7	0.5	0.5	0.5	<1	—	—	—	—	—	—	—	
DW2050	01/13/03	—	<50	<50	4.4	0.5	0.5	0.5	<1	—	—	—	—	—	—	—	
DW2050	04/16/03	—	<50	<50	4	<1	<1	<1	<1	—	—	—	—	—	—	—	
DW2050	07/16/03	—	<50	<50	9	<1	<1	<1	<1	—	—	—	—	—	—	—	
DW2050	10/21/03	—	<50	<50	11	<1	<1	<1	<1	—	—	—	—	—	—	—	
DW2050	04/06/04	—	<50	<50	6.4	0.5	0.5	0.5	<1	—	—	—	—	—	—	—	
DW2050	12/31/04	—	<50	<50	27	<0.5	<0.5	<0.5	<0.5	—	<5	<10	<5	<5	<0.5	<0.5	
DW2050	01/31/05	—	—	—	22	—	—	—	—	—	22	<5	<10	<5	<5	<0.5	
DW2050	02/25/05	—	—	—	19	—	—	—	—	—	<5	<10	<5	<5	<5	<100	
DW2050	03/30/05	—	—	—	15	—	—	—	—	—	<5	<10	<5	<5	<5	<100	
DW2050	04/22/05	—	—	—	20	—	—	—	—	—	<5	<10	<5	<5	<5	<0.5	
DW2050	05/20/05	—	—	—	7.6	—	—	—	—	—	<5.0	<10.0	<5.0	<5.0	<5.0	<0.50	
DW2050	06/17/05	—	—	—	16	—	—	—	—	—	<5.0	<10	<5.0	<5.0	<5.0	<0.50	
DW2050	07/22/05 a	—	—	—	<1.0	—	—	—	—	—	<5.0	<10	<5.0	<5.0	<5.0	<100	
DW2050	08/05/05	—	—	—	20	—	—	—	—	—	<5.0	<10	<5.0	<5.0	<5.0	<100	
DW2050	09/23/05	—	—	—	26	—	—	—	—	—	<5.0	<10	<5.0	<5.0	<5.0	<0.50	
DW2050	October 2005 - Treatment system installed.																
DW2050	10/19/05	W-INF	—	—	20.0	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	
		W-INT	—	—	<1.0	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	
		W-EFF	—	—	<1.0	—	—	—	—	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	
DW2050	11/18/05	W-INF	<50	<50	20	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<50	
		W-INT	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<50	
		W-EFF	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<50	
DW2050	12/29/05	W-INF	<50	<25	<1.0	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<50	
		W-INT	<50	<25	<1.0	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<50	
		W-EFF	<50	<25	<1.0	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<50	

TABLE 1
CUMULATIVE MONITORING AND SAMPLING DATA FOR PRIVATE WATER WELL
AND WELL HEAD TREATMENT SYSTEM
 Redwood Oil Facility 114
 1855 Guerneville Road
 Santa Rosa, California
 (Page 2 of 2)

Well ID	Sample Date	Sample ID	TPHd ($\mu\text{g/L}$)	TPHg ($\mu\text{g/L}$)	MTBE ($\mu\text{g/L}$)	B ($\mu\text{g/L}$)	T ($\mu\text{g/L}$)	E ($\mu\text{g/L}$)	X ($\mu\text{g/L}$)	ETBE ($\mu\text{g/L}$)	TBA ($\mu\text{g/L}$)	DIPE ($\mu\text{g/L}$)	TAME ($\mu\text{g/L}$)	1,2-DCA ($\mu\text{g/L}$)	EDB ($\mu\text{g/L}$)	Ethanol ($\mu\text{g/L}$)	Methanol (mg/L)
DW2050	01/27/06	W-INF	<50	<50	3.9	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50
		W-INT	<50	<50	<1.0	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50
		W-EFF	<50	<50	<1.0	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50
DW2050	02/27/06	W-INF	<50	<50	3.5	<0.50	<0.50	<0.50	<0.50	<5.0	<10	<5.0	<5.0	<0.50	<0.50	<100	<0.50
		W-INT	--	--	<1.0	--	--	--	--	--	--	--	--	--	--	--	--
		W-EFF	--	--	<1.0	--	--	--	--	--	--	--	--	--	--	--	--
DW2050	03/08/06	W-INF	<50	<50	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<5.0	<0.050
		W-INT	--	--	<0.50	--	--	--	--	--	--	--	--	--	--	--	--
		W-EFF	--	--	<0.50	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

Data collected prior to April, 2004 compiled from the ECM Group Systems Operations Report dated July 9, 2004.

- TPHd = Total petroleum hydrocarbons as diesel analyzed using EPA Method 8015M.
- TPHg = Total petroleum hydrocarbons as gasoline analyzed using EPA Method 8260B. Prior to 10/19/05, analyzed using EPA Method 8015M.
- MTBE = Methyl tertiary butyl ether analyzed using EPA Method 8260B. Prior to 12/31/04 analyzed using EPA Method 8021B.
- BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA Method 8260B. Prior to 10/19/05, analyzed using EPA Method 8021B.
- ETBE = Ethyl tertiary butyl ether analyzed using EPA Method 8260B.
- TBA = Tertiary butyl alcohol analyzed using EPA Method 8260B.
- DIPE = Di-isopropyl ether analyzed using EPA Method 8260B.
- TAME = Tertiary amyl methyl ether analyzed using EPA Method 8260B.
- 1,2-DCA = 1,2-Dichloroethane analyzed using EPA Method 8260B.
- EDB = 1,2-Dibromoethane analyzed using EPA Method 8260B.
- Ethanol = Ethanol analyzed using EPA Method 8260B.
- Methanol = Methanol analyzed using EPA Method 8015.
- $\mu\text{g/L}$ = Micrograms per liter.
- mg/L = Milligrams per liter.
- = Not measured/Not sampled/Not analyzed.
- < = Analytes not detected at or above the laboratory reporting limit.
- a = Results not consistent with historical trend; samples for DW1815, DW2050, and DW2075 likely mislabeled in field.
- b = Methanol results updated on 10/10/05
- c = Methanol detection in intermediate port sample likely due to laboratory contamination.
- d = Hydrocarbons reported as TPH as diesel do not exhibit a typical diesel chromatographic pattern.



Report Number : 48797

Date : 3/22/2006

Glenn Matteucci
Environmental Resolutions, Inc
601 North McDowell Boulevard
Petaluma, CA 94954-2312

Subject : 3 Water Samples
Project Name : Redwood 114/Santa Rosa
Project Number : 261913

Dear Mr. Matteucci,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink that reads "Joel Kiff". The signature is fluid and cursive, with a large, stylized "J" at the beginning. There are two vertical lines to the right of the signature.

Joel Kiff



Report Number : 48797

Date : 3/22/2006

Project Name : Redwood 114/Santa Rosa

Project Number : 261913

Sample : 2050 INF

Matrix : Water

Lab Number : 48797-01

Sample Date : 3/8/2006

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	3/11/2006
Toluene	< 0.50	0.50	ug/L	EPA 8260B	3/11/2006
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	3/11/2006
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	3/11/2006
Methyl-t-butyl ether (MTBE)	2.4	0.50	ug/L	EPA 8260B	3/11/2006
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	3/11/2006
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	3/11/2006
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	3/11/2006
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	3/11/2006
Methanol	< 50	50	ug/L	EPA 8260B	3/11/2006
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	3/11/2006
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	3/11/2006
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	3/11/2006
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	3/11/2006
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	3/11/2006
4-Bromofluorobenzene (Surr)	98.6		% Recovery	EPA 8260B	3/11/2006
TPH as Diesel (Silica Gel)	< 50	50	ug/L	M EPA 8015	3/11/2006
Octacosane (Diesel Surrogate)	82.6		% Recovery	M EPA 8015	3/11/2006

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800



Report Number : 48797

Date : 3/22/2006

Project Name : Redwood 114/Santa Rosa

Project Number : 261913

Sample : 2050 INT

Matrix : Water

Lab Number : 48797-02

Sample Date : 3/8/2006

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	3/22/2006
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	3/22/2006

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800



Report Number : 48797

Date : 3/22/2006

Project Name : Redwood 114/Santa Rosa

Project Number : 261913

Sample : 2050 EFF

Matrix : Water

Lab Number : 48797-03

Sample Date : 3/8/2006

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	3/20/2006
Toluene - d8 (Surr)	104		% Recovery	EPA 8260B	3/20/2006

Approved By:  Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

Report Number : 48797

Date : 3/22/2006

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : Redwood 114/Santa Rosa

Project Number : 261913

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
TPH as Diesel	Blank	<50	1000	1000	958	898	ug/L	M EPA 8015	3/10/06	95.8	89.8	6.40	70-130	25
Tert-Butanol	49039-02	38	200	200	243	235	ug/L	EPA 8260B	3/21/06	102	98.5	4.04	70-130	25
Methyl-t-Butyl Ether	49039-02	77	40.0	40.0	120	123	ug/L	EPA 8260B	3/21/06	106	114	6.55	70-130	25
Tert-Butanol	48996-08	<5.0	200	200	208	205	ug/L	EPA 8260B	3/20/06	104	102	1.61	70-130	25
Methyl-t-Butyl Ether	48996-08	<0.50	40.0	40.0	43.5	41.7	ug/L	EPA 8260B	3/20/06	109	104	4.31	70-130	25
Benzene	48848-02	<0.50	40.0	40.0	43.6	42.0	ug/L	EPA 8260B	3/11/06	109	105	3.80	70-130	25
Toluene	48848-02	<0.50	40.0	40.0	44.9	43.0	ug/L	EPA 8260B	3/11/06	112	107	4.40	70-130	25
Tert-Butanol	48848-02	<5.0	200	200	196	202	ug/L	EPA 8260B	3/11/06	97.8	101	3.02	70-130	25
Methyl-t-Butyl Ether	48848-02	<0.50	40.0	40.0	42.2	42.0	ug/L	EPA 8260B	3/11/06	106	105	0.555	70-130	25

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Approved By: Joel Kiff

Report Number : 48797

Date : 3/22/2006

QC Report : Laboratory Control Sample (LCS)

Project Name : Redwood 114/Santa Rosa

Project Number : 261913

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Tert-Butanol	200	ug/L	EPA 8260B	3/21/06	97.8	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	3/21/06	105	70-130
Tert-Butanol	200	ug/L	EPA 8260B	3/20/06	102	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	3/20/06	104	70-130
Benzene	40.0	ug/L	EPA 8260B	3/11/06	105	70-130
Toluene	40.0	ug/L	EPA 8260B	3/11/06	108	70-130
Tert-Butanol	200	ug/L	EPA 8260B	3/11/06	99.5	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	3/11/06	96.3	70-130

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Approved By:

Joel Kiff



2795 2nd Street Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4808

Lab No. 48797

Page 1 of 1

Project Contact (Hardcopy or PDF To):

Glenn L. Matteucci

California EDF Report? Yes No

Company / Address:

601 N. McDowell Blvd., Petaluma, CA 94954

Recommended but not mandatory to complete this section:

Sampling Company Log Code:

NA

Phone No.:

707-766-2000

Fax No.:

707-789-0414

Global ID:

T0609700601

Project Number:

261913

P.O. No.:

NA

EDF Deliverable To (Email Address):

gmatteucci@eri-us.com; mlinale@eri-us.com

Project Name:

Redwood 114/Santa Rosa

Sampler:

Dan J. Dowd

Signature:

Project Address:

1855 Guerneville Rd., Santa Rosa, CA

Sampling

Container

Preservative

Matrix

Sample Designation

Date

3-8-06

Time

1325

40 ml VOA

X

SLEEVE

X

POLY

X

AMBER

X

HCl

X

HNO₃

X

ICE

X

NONE

X

WATER

X

SOIL

X

BTEX (8021B)

X

BTEX/TPH Gas/MTBE (8021B/M8015)

X

TPH as Diesel (M8016)

X

TPH as Motor Oil (M8015)

X

TPH Gas/BTEX/MTBE (8260B)

X

5 Oxygenates/TPH Gas (8260B)

X

7 Oxygenates/TPH Gas (8260B)

X

5 Oxygenates (8260B)

X

7 Oxygenates (8260B)

X

Lead Scav. (1,2 DCA & 1,2 EDB - 8260B)

X

EPA 8260B (Full List)

X

Volatile Halocarbons (EPA 8260B)

X

Lead (7421/239.2) TOTAL W.E.T.

X

TPHg/BTEX (8260B)

X

HOLD

X

O

O

12hr

24hr

48hr

72hr

1wk

2wk

For Lab Use Only

Relinquished by:

Date

3/8

Time

1830

Received by:

Remarks:

Sample Receipt

Temp °C 2.6 Therm. ID# IR-1

Initial KLM

Date 03-09-06 Time 1720

Coolant present: Yes / No

Relinquished by:

Date

3/8

Received by:

Bill to:

Redwood Oil

Relinquished by:

Date

3-9-06

Received by Laboratory: *Kiff Ron McGee Analytical*